



## Environmental management systems' awareness: an investigation of top 50 contractors in Egypt

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### ABSTRACT

The construction industry, as an economically strategic sector and a large contributor to pollution generation, is expected to face enormous obstacles if it doesn't respond to the new business and regulatory environmental requirements in an increasingly competitive market after international trade liberalization. A practical tool to achieve sustainable construction is through adopting Environmental Management Systems (EMS). Movement towards environmental management systems is getting momentum in the construction industry of most developed countries. However this field is still a relatively new and the concept is still marginalized in most of the developing world. It is suggested that lack of awareness is a major contributor to this lag.

This paper reports on the results of a research on the environmental awareness of the top 50 contractors in Egypt. It investigates their ISO 14001/EMS awareness, opinions about contractor's responsibility towards the environment, necessity of ISO 14001, and obstacles and potentials for ISO 14001 adoption. These results will pave the way for effective implementation of EMS by contractors in Egypt. The paper also discusses integrating sustainable construction principals with EMS. This integration should result in environmental, social, as well as economical benefits.

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### 1. Introduction

In most countries governments and public communities are giving attention to environmental issues [1]. This attention is creating pressures on businesses to introduce environmental perspective into their policies and practices [2,3]. The environmental movement is very clear in the construction industry of the industrialized countries. "However, sustainability is still a relatively new concept for the construction industry in the developing world, and it is not yet receiving sufficient attention" [4,5]. Environmental aspects in developing countries are often marginalized as they are faced with more pressing problems, as well as lack of financial resources, and legal and administrative systems to formulate and monitor enforcement of regulations [6]. On the other hand, awareness about environmental issues is increasing among the governments and general public of developing countries [1].

The environmental impacts of construction activities are probably larger in developing countries than it is in developed

countries, and the construction industry in the developing world cannot continue to neglect the environment [4]. The construction industry is challenged to create innovative techniques, technologies and management systems to be able to satisfy the emerging requirements [3]. The ISO 14001 offers a framework for contractors to manage their environmental impacts without compromising their corporate goals since it is a business standard that could achieve cost reductions, marketing advantage, improved relations with local authorities and community, and employee motivation [7]. In a developing country like Egypt, the construction industry receives approximately 50% of the total investment and employs at least 9% of the Egyptian labor [8]. However, the construction industry in Egypt is lagging behind in adopting the ISO 14001. In year 2000, the construction industry worldwide held the 5th position in the highest number of ISO 14001 certification (1035 certificates); while in Egypt only five contractors were ISO 14001 certified till the end of year 2002.

Not only the 'green' clients can be a great obstacle for exporting local products and services, but will be also a threat in local markets. In the past few years, most of the large projects were done through partnership between Egyptian companies and foreign counterparts [9]. In addition, several infrastructure projects are funded by international organizations that are expected to require

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environmental specifications, specifically ISO 14001, due to the continuous rise of global action to protect the environment [10,11].

In a time of globalization and liberation of international trade, developing countries like Egypt need huge efforts to prepare the construction industry sector for the new business requirements of the coming era where an increasingly competitive market environment would exist. One of the constraints in front of the Egyptian construction sector is resulting from the lag of adoption of environmental management systems.

## 2. Egyptian context of the construction sector

The construction sector is one of the most dynamic sectors in the Egyptian economy. In 2000, the Egyptian construction market ranked 36th in the global construction market at a value of \$12.711 billion [12]. It is ranked 7th among the economic sectors in terms of its contribution to the total GDP of Egypt for 2001/2002 [13]. Moreover, the Egyptian construction sector has significant impact of increasing the country's investment and employment opportunities.

In the early twentieth century, the Egyptian construction sector was dominated by foreign companies. Later, partnerships between foreign and Egyptian capital were created in addition to privately-owned Egyptian companies. However when nationalization took place in 1960s all the private Egyptian and foreign companies were taken over and operated by the Egyptian government. By the mid-70s, the Egyptian government began liberating the economy through the Open Door Policy which allowed for the unlimited operation of Egyptian private companies once more. The government's significant spending on infrastructure, development, and housing projects has led to the construction's sector steady growth rate throughout the 1980s till first half of the 1990s, then booming again from 1996 till 2000. In between, there were periods the construction sector got frozen mainly as a result of the real-estate market's recession caused by the diminishing demand.

As to the present market structure, local contractors undertake about 70% of the construction work while international firms perform the remaining 30%. In 2002, about 93 out of 25,623 of the total registered contractors in the Egyptian Federation for Construction and Building Contractors companies had a 10% foreign share in their total issued capital and 4 contractors had a 32% American share in total issued capital [14]. Although usually the construction contractors in Egypt were only responsible for the execution or demolition of projects, however recently some Egyptian contractors have extended their role to be owners and operators as well through real-estate and community development projects. This trend has been initiated through establishing self-sustained residential cities and community complexes for the upper and middle classes such as Al-Rehab City and Madinaty projects by Talaat Mostafa Group.

The development and competitiveness of the Egyptian construction sector in the local and international market is affected by several factors. One of these factors is related to the inefficient operation and underperformance of the Egyptian construction companies. The majority of the Egyptian construction companies: suffer from poor management and strategic planning; lack proper and advanced Procurement Management (PM) techniques; do not follow a niche marketing strategy and absence of marketing knowledge and tools needed to access foreign markets; lack of an information network providing construction companies with a comprehensive set of data and statistics about potential export markets; limited presence of international standards of quality and performance; and the Egyptian companies are less technologically advanced and smaller in size than foreign companies operating in the construction field [15]. Despite of the government efforts to encourage exports through economic reforms and development

strategies, the Egyptian construction exports remain limited amounting to an annual average of \$400 million compared to a regional competitor such as Turkey that reached \$25.4 billion in year 2000 [15].

The Egyptian government has been committed to promote international trade within the construction and related engineering sectors by signing international, regional, and bilateral agreements; such as the General Agreement for Trade in Services (GATT) and the Common Market for Eastern and Southern Africa (COMESA). Although these agreements will have a positive implications on the construction sector in Egypt due to the ease of transfer of skills, technology, and expertise; however many construction firms will suffer dramatically from open competition with foreign companies due to lack of international exposure and internationally sub-standard quality of performance [15].

## 3. Research objectives

This paper reports on M.Sc. research [16] that aimed to investigate the readiness of the top fifty contractors in Egypt to implement ISO 14001. Part of the research objectives were to:

- Assess the Egyptian contractors current level of environmental management systems' awareness.
- Detect the common trends of obstacles facing ISO 14001 implementation and benefits that would motivate its adoption.

## 4. Background

### 4.1. The concept of sustainable construction

"The construction industry has significant direct and indirect links with the various aspects of sustainable development" [17]. The International Council for Research and Innovation in Building and Construction (CIB) with the United Nations Environment Programme (UNEP) International Environmental Technology Centre (IETC) defined sustainable construction as "a holistic process aiming to restore and maintain harmony between the natural and built environments, and create settlements that affirm human dignity and encourage economic equity" [4]. Sustainable construction is the approach the construction industry needs to adopt in order to contribute to the efforts towards attaining sustainable development.

Hill and Bowen [18] attempted to create a model that combines the ideals of 'sustainability' in general and those of 'sustainable construction' in particular. Hill and Bowen singled out four pillars: social, economic, bio-physical (environmental), and technical as illustrated in Fig. 2. One of the management tools to achieve sustainable construction is EMS.

### 4.2. Environmental management system

Environmental Management System (EMS) provides a structured and systematic approach to incorporate environmental protection in all aspect of the company [19]. In 1992, the first EMS standard (BS 7750) appeared in the UK, and then it was followed by appearance of other local and regional standards (such EMAS: European Union's Eco-management and Audit Scheme, etc) [20]. In 1996, the International Organization for Standardization (ISO) issued the first EMS standard on the international scale: ISO 14001 then an updated version for it was published in year 2004. There are five requirements that have to be established in order to implement ISO 14001:2004 as shown in Fig. 1: (a) Environmental Policy, (b) Planning, (c) Implementation, (d) Checking, and (e) Management Review [21].

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